

APPLICANT(S): REUVEN, Yossi
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AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

1. (Currently Amended) ~~An apparatus~~ A dual output synthesizer comprising:
a fractional N synthesizer to ~~provide output a first frequency of~~ a first output signal having a first frequency on a first output; and
an integer divider synthesizer coupled to the first output to receive at least a portion of the first output signal to be used as the fundamental frequency of the ~~fractional N integer divider~~ synthesizer and to ~~provide output on a second output~~ a second output signal having a second frequency derived from the first frequency ~~of the first output signal, wherein the first and second output signals are provided respectively to first and second mixers~~ wherein the second frequency is substantially similar to the first frequency.
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Previously Presented) The dual output synthesizer apparatus of claim 1, further comprising an oscillator to provide a fundamental frequency to the fractional N synthesizer.

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7. (Original) The dual output synthesizer apparatus of claim 6 wherein the oscillator includes a crystal oscillator.
8. (Currently Amended) A method of synthesizing signals by a dual output synthesizer comprising:
outputting by a fractional N synthesizer a first output signal having a first frequency on a first output;
using the first output signal as a fundamental frequency of an integer divider synthesizer; and
generating outputting by [[an]] the integer divider synthesizer coupled to the first output [[an]] a second output signal having a second frequency derived from an input said first output signal on a second output, wherein the frequency of the output signal is substantially similar to the frequency of the input signal having a desired frequency generated by a fractional N synthesizer; and
providing said output signal and said input signal to a first mixer and a second mixer, respectively.
9. (Cancelled)
10. (Cancelled)
11. (Original) The method of claim 8 comprising:
generating the [[input]] first output signal and the second output signal from a signal having a fundamental frequency.

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12. (Currently Amended) ~~An apparatus~~ A wireless communication device
comprising:

a dual output synthesizer comprising:

a first phase locked loop of a fractional N synthesizer to set a first frequency of a first output signal of a first voltage controlled oscillator ~~using a fractional N synthesizer~~ to derive said first frequency from an input frequency and provide said first output signal on a first output; and

a second phase locked loop of an integer divider synthesizer coupled to said first output to receive at least a portion of the output signal of the first voltage controlled oscillator to be used as a fundamental frequency of ~~and to control~~ a second voltage controlled oscillator and to provide output a second output signal on a second output having a second frequency derived from the first frequency ~~using an integer divider synthesizer~~; and

a transceiver operably coupled to the dual output synthesizer having first and second mixers operably coupled to the first and second outputs, ~~voltage controlled oscillators~~ respectively ~~and able to transmit and receive signals by~~ at least two dipole antennas, wherein the frequency of the second output signal is substantially similar to the frequency of the first output signal.

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Currently Amended) A wireless communication system comprising:

a mobile station having a dual output synthesizer, which includes:

a first phase locked loop of a fractional N synthesizer to set a first frequency of a first output signal of a first voltage controlled oscillator ~~using a fractional N synthesizer~~ to derive said first frequency from ~~an input~~ a first fundamental frequency and to provide said first output signal on a first output;

a second phase locked loop of an integer divider synthesizer coupled to said first output to receive at least a portion of the first output signal of the first voltage controlled oscillator to be used as a second fundamental frequency of the second phase locked loop and to control a second voltage controlled oscillator to provide a second output signal on a second output having a second frequency derived from the ~~first~~ second fundamental frequency ~~using an integer divider synthesizer~~; and

a transceiver having first and second mixers operably coupled to the first and second ~~voltage-controlled oscillators~~ outputs, respectively and able to transmit and receive signals by at least two dipole antennas, wherein the frequency of the second output signal is substantially similar to the frequency of the first output signal.

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

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23. (Original) The wireless communication system of claim 18, comprising a base station of a cellular communication system.
24. (Original) The wireless communication system of claim 18, wherein at least one antenna of the two or more antennas is an internal antenna.